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How to Balance the Intellectual Property Conflict: a Case Study of Japanese Pharmaceutical Companies in Emerging Countries

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Abstract

Pharmaceutical companies entering emerging countries will face intellectual property conflicts due to issues relating to the access to medicines of consumers in those countries. "Intellectual property conflict" refers to the conflict of interest which exists between manufacturers, who own intellectual property, and consumers, who do not.

In reviewing the representative literature, there is a focus on the pricing patterns (known as differential pricing) of pharmaceuticals. This is a way of setting different prices for the same products in different areas or countries, in particular setting a low price for low-income consumers, while at the same time maintaining the pharmaceutical companies' profits by granting patents.

In spite of the growing literature on differential pricing, research in the field of corporate behavior reviewed has been relatively less detailed. This paper explores the issue from a corporate perspective, by examining four R&D-driven PCs in Japan: Takeda Pharmaceutical Company Limited (Takeda), Daiichi Sankyo Company Limited (Daiichi Sankyo), Eisai Co., LTD (Eisai) and Astellas Pharma Inc. (Astellas), mainly through the use of quantitative data as a means to determine key financial indicators during the period 2000-2013 reviewed.

Keywords: Intellectual Property (IP), Intellectual Property Conflict (IP Conflict), Patent, Pharmaceutical Companies (PCs), Emerging Countries, Access to Medicines

1. Introduction

As pharmaceutical markets in developed countries, including Japan, America and Europe mature, attention has turned to 'pharmerging markets'.[1] Pharmaceutical companies (hereafter, PCs) have carried out their business in the markets of developed countries, mainly in Japan, America and Europe during the past decades. However, because of the falling birthrate and depopulation, and rising medical expenses, the governments in developed countries took action to curb medical expenses, especially through promoting generic drugs. In addition, many PCs lost their revenues in developed countries because of the impact of top-selling products losing their patent protection. At the same time, the markets in emerging countries (emerging markets) were growing. The emerging market will reach 28 percent of global spending by 2016, compared with 4.8 percent in 2004, as population and economic growth contribute to a dramatically higher use of medicines in these markets. Moreover, the CAGR of pharmaceuticals markets during the period 2013-2017 is expected to be 14-17 percent in emerging countries, compared to 3-5 percent in developed countries.[2] In short, this tendency indicates that the contribution of revenues from developed markets is much less than from emerging markets, and emerging markets have become more attractive to PCs.

On the other hand, PCs which are entering emerging countries will face serious problems, such as intellectual property conflicts due to access to medicines and government regulation related to this. 'Access to medicines' means the problem of low-income consumers who cannot afford the drug prices for their treatment. The main issue surrounding access to medicines is high drug prices. However, why is it that the same pricing does not cause problems of access to medicines in developed markets? One reason for this may be the

[1] The phrase 'pharmerging market' stands for pharm(aceutical)+(em)erging. That is, emerging markets targeted by pharmaceutical companies. Generally, the pharmaceutical markets in emerging countries are seen as pharmerging markets, like China, Russia, Brazil and India.

[2] Source: IMS Health
http://www.imshealth.com/deployedfiles/ims/Global/Content/Insights/Medicines_Outlook_Through_2016_Report.pdf (Accessed on 5 Dec. 2013)

fact that medical insurance systems in emerging countries have not been fully developed. Because of these deficient medical insurance systems, copayment for consumers in emerging countries will be higher than that for consumers in developed countries.[3] Moreover, some consumers in some emerging countries have to pay the full cost of medicines. In spite of rapid economic growth in emerging countries, among the population there remains a large proportion of low-income households[4] (for instance, the proportion of low-income households in China accounted for 49.4percent of total population in 2010[5]). The amount of copayment will become a burden for low-income citizens, thus causing the issue of access to medicines.

To solve this issue, governments in emerging markets have introduced some policies, such as the issuing of compulsory licensing to manufacture products (usually called generic products), which are provided at a low price to consumers. Compulsory licensing is a form of authorization, whereby governments allow someone else to produce patented products or processes without the consent of the patent owner under the TRIPS (Trade-Related Aspects of Intellectual Property Rights) Agreement. Compulsory licensing will not benefit PCs, because they earn less than in the situation before the issuing of compulsory licensing. Under the scheme of compulsory licensing, PCs only earn a profit of 0.5% of sales, based on the pricing of the generic products (Tsuruhara, 2007, p.43.)[6]

In these circumstances, what path will companies take? It seems that, for PCs who want to run their business smoothly in emerging markets, it will depend on whether they address the issue of access to medicines voluntarily, thereby eliminating the potential for compulsory licensing; that is, whether they offer medicines at a low price voluntarily. However, as pharmaceuticals require huge R&D costs, it seems that, by setting low prices, it would be difficult to recover costs and repay investors.

How much cost is invested in developing a new type of medicine? It takes an enormous amount of time and money to develop one new drug. It takes an average of 10-15 years to develop a new medicine, from the earliest stages of discovery to the time it is

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[3] The average copayment for consumers in developed countries is 7-13 percent, compared with 50-100 percent in emerging countries.

[4] According to White Paper on International Economy and Trade (2010), low-income household refers to annual disposal income of less than US $5,000.

[5] Source: Website of Ministry of Economy, Trade and Industry. http://www.meti.go.jp/report/tsuhaku2011/2011honbun_p/2011_03-1.pdf(Accessed on December1st, 2013)

[6] For more examples of compulsory licensing please see the Website of the Japanese Patent Office: http://www.jpo.go.jp/shiryou/toushin/chousa/pdf/tripschousahoukoku/24_1.pdf

available for treating patients. The average cost is estimated to be $800 million to $1 billion.[7] Even though pharmaceuticals require huge R&D costs, PCs have to consider the background to people's needs or the introduction of low-priced drugs to solve the issue of access to medicines (the relationship between access to medicines and IP will be described later) if they want to enter the emerging markets.

Therefore, this paper considers some schemes that might be able to balance the IP conflict due to problems of access to medicines, using a case study from the companies' perspective. 'Schemes for balancing IP conflicts' means considering how PCs could benefit under the conditions of low pricing, in order to solve the problem of access to medicines due to IP conflicts.

The paper is structured as follows: Section 2 provides a definition of "intellectual property" (IP), and describes what IP conflicts are (the relationship between access to medicines and IP). Section 3 reviews and analyzes the theoretical literature about IP conflicts. Section 4 discusses a methodology to interpret the data available. Section 5 presents some empirical findings regarding studies of pharmaceutical manufacturers. Section 6 provides some tentative conclusions.

2. Concepts of intellectual property and intellectual property conflict

2.1 The concept of intellectual property

The World Intellectual Property Organization (WIPO) defines "intellectual property" (IP) as creations of the mind, including inventions, literary and artistic works, and symbols, names, images, and designs used in commerce. It is a wide ranging definition. In practice, the definition of IP may be limited and varies according to different research outcomes and viewpoints. For instance, Ghauri, Pervez N., and Rao, P. M. (2009) refers to IP as technology-based intangible assets, from the perspective of the IT industry.

For the purposes of this paper, the term "intellectual property" (IP) refers to a valued part of a creation of the mind, which would be able to generate profit for the given company. It divides into two types: one is protected by IPRs (intellectual property rights), such as patents, copyright, and so on; the other is not protected by IPR, such as ideas or

[7] Source: Website of PhRMA
http://www.phrma.org/sites/default/files/.../rd_brochure_022307.pdf (Accessed on September 19th, 2013)

designs for a new product. In business management, IPs are interpreted as a kind of business resource (like a factory), that is a tool to generate profit. On the other hand, there are some IPs which are unable to generate profit for a company, but which require maintenance costs, and they are seen as negative assets. Therefore, they cannot be considered as IPs here.

How does IP generate profit for a company? One sort of IP, which is not protected by IPR, like ideas, are sales resources. This could make a difference with other competitors and such differences could create opportunities, if chosen by consumers, which then lead to increased sales. Another sort of IP, which is protected by IPR, such as a patent, has exclusive rights and will bar price competition as a result of competition with other rivals; therefore it is a tool to secure profit (Doi, 2008: 893).

2.2 The relationship between Intellectual Property and access to medicines

The relationship between Intellectual Property and access to medicines, known here as the "Intellectual Property conflict", refers to the conflict of interest which exists between manufacturers, who own intellectual property, and consumers, who do not. In this paper, 'the interest of manufacturers' refers to sales, profit, or revenue; and 'the interest of consumers' means access to medicines for treatment.

As described above, the issue of intellectual property conflict relates to high drug prices. Previous studies, as in Cottingham, J., and Berger, M. (2011), claim that high drug prices always resulted from patents owned by PCs. On the other hand, because of the characteristic of intellectual property that it is intangible and easily imitated, a patent system is needed. Generally, PCs apply for a patent to protect the knowledge they generate, a process which often gives them a monopolistic control over new drugs for a set period of time. Because the technology is easy to imitate, PCs will lose market share and profit once the technology is copied by other competitors (the results are similar to a patent expiring). In this way, PCs will lose opportunities to recover costs, and incentives for future research will diminish.

To many, it may seem that the advent of the drug (or patented drug) has simply widened the gap between developed and emerging markets. Furthermore, even though patents may in theory enable a firm to charge a high price, this may not be in a firm's self-interest in markets where the consumers cannot afford to pay (Danzon, P. M., et al, 2003). For this reason, the issue of access to medicines relative to patented intellectual property is

called the intellectual property conflict.

3. Literature Review-Differential pricing

Representative studies focus on 'differential pricing' (also known as tiered pricing, or price discrimination), which sets different prices for the same products in different areas or countries; that is to say that a high price is set in high-income countries, and a low price is set in low-income countries (Danzon, P. M, et al., 2003; Frank, R. L., 2011), based on the price elasticity of demand.

Danzon, P. M. et al. (2003), Frank R. L. (2011), and Mazummdar, M., and Banerjee, D. S. (2012), consider that differential pricing is a bilateral way to balance IP conflicts between PCs and consumers. This is because differential pricing, especially setting a low price, could provide low-income consumers with easy access to medicines. At the same time, PCs could benefit more from differential pricing than from uniform pricing (Frank, R. L., 2011, p.1540) by taking advantage of the elasticity of demand. Given the sensitivity of consumers' demand for a product to changes in price, generally speaking low-income consumers will have more elastic demand, meaning that if the price decreases, their consumption will increase (the market is expanded) (Frank, R. L., 2011, p.1539). The consequent increase in consumption will lead to increased sales.

On the other hand, the PCs' problem is their high R&D expenses, and they also have to add in production costs (such as materials costs) due to the expanding scale of production as consumption rises. Under these conditions of high cost and low prices, how could PCs benefit? Regarding this question, Danzon, P. M. et al. (2003) describe the concept of pricing standards; that is, a set price under or near the marginal cost, whilst Frank, R. L. (2011) proposes an approach by reducing fixed costs.

Although there is a growing amount of literature on differential pricing, Moon, S. et al. (2011) and Lopert, R. et al. (2002) rejected this idea as it has two shortcomings: a small market scale and a requirement for a low-cost production capability. To be effective, pricing by elasticity of demand is dependent on a large-scale market, but if the market scale is small, an increase in sales cannot be expected. Furthermore, if PCs do not have a low-cost production capability to manage increasing production costs caused by a larger market size, differential pricing can only work out in the short term, but it is difficult to continue with this

in the long term.

4. Methodology

In spite of the growing amount of literature focusing on differential pricing, a theoretical approach which is limited, research in the field of corporate behavior on how to balance the IP conflict has been relatively less detailed. This paper explores the issue from the perspective of the company by examining four leading PCs in Japan: Takeda Pharmaceutical Company Limited (Takeda), Daiichi Sankyo Company Limited (Daiichi Sankyo), Eisai Co., LTD (Eisai) and Astellas Pharma Inc. (Astellas), mainly through the use of quantitative data as a means of determining key financial indicators during the period 2000-2013 reviewed. Although the four firms are considered to be rather similar with regard to their reasons for entering the markets of emerging countries (that is, to recover their lost revenues in developed countries), essentially the way that they have entered these markets reveals unique differences when one analyzes certain key elements, such as their strategies to enter developing countries. Takeda and Daiichi Sankyo acquired a generic manufacturer, Eisai built a factory in the emerging countries, and Astellas introduced regional strategies, including a strengthened sales network. The objective of the four firms was similar, that is to reduce production costs to supply lower priced drugs, although their practices are different.

As indicated, much reliance is placed on quantitative data and the next section of this paper provides a quantitative examination of Takeda, Daiichi Sankyo, Eisai and Astellas in terms of their respective corporate investments and financial performance from 2000-2013.

5. Some empirical findings

The four companies are leading R&D-driven pharmaceutical companies in Japan, although their sales volumes are different. The major markets of the four companies are Japanese, European and American. The net sales, net incomes, ROE and share price of each company have decreased due to the impact of top-selling products losing patent protection in the American market, which is a major market of the four companies (see Table 1). For example, the key financial indicators of Takeda, whose patent protection for its top-selling product, TAKEPRON, expired in Nov. 2009, have decreased rapidly since March 2011 (the

fiscal year of the Japanese company ends on Mar 31), as seen in Table 2. This is one of the reasons that the four companies entered the emerging countries' market.

The four companies have been expanding their businesses in emerging countries since 2008 by acquiring generic manufacturers, building factories and introducing regional strategies in the emerging countries. The resultant financial performance of each company is reflected in Table 2, Table 3, Table 4 and Table 5.

Takeda has rapidly increased its sales in emerging countries through the acquisition of generic manufacturers. Takeda acquired Nycomed International Management GmbH (Nycomed) in 2011 and Multilab Industria e Comercio de Produtos Farmaceuticos Ltda (Multilab) in 2012, both of which have a strong business base in the emerging countries, including market share and a sales network. Sales have increased, however revenues have decreased because of increasing operating expenses, particularly increasing sales administrative expenses (see Figure 1). Takeda has acquired generic manufacturers, meaning that personnel expenses have also increased, due to an increase in the number of staff.

Daiichi Sankyo,[8] who acquired Ranbaxy Laboratories Limited (Ranbaxy), a generic manufacturer, has rapidly increased its sales in emerging countries. Ranbaxy has a large market share and a strong sales network in the emerging countries. Actually, sales results in the emerging countries were almost achieved by Ranbaxy alone.

The financial results of Daiichi Sankyo are similar to Takeda; that is, despite increasing sales, the revenues have decreased due to an increase in operating expenses, especially increased administrative expenses. In addition, Daiichi Sankyo transferred an allowance to cover the conflict between Ranbaxy and the US Food and Drug Administration (FDA) in 2012, and they achieved agreement in May, 2013. Daiichi Sankyo spent ¥38.8billion to deal with this conflict. Nevertheless, the conflict arose again when the FDA issued an import alert against drugs produced at Ranbaxy's newest facility in Mohali, India, in September, 2013. This case affected the financial performance of Daiichi Sankyo, and as a result their revenues will decrease in 2014.[9]

[8] Daiichi Sankyo was established in 2005 through the merger of Sankyo Company, Limited and Daiichi Pharmaceutical Company, Limited. Thus, the data of 2000-2005 in Table 3 and Figure 2 are simple additions of the figures for Daiichi and Sankyo.

[9] Daiichi Sankyo has to manufacture products (including generic versions of a Pfizer Inc. cholesterol-lowering drug and Eisai Co. Alzheimer's drug) in the U.S. plants as its low-cost Indian plants are banned by the FDA. Drug manufacturing costs in India are said to be about half of those in developed countries, thus increasing costs will affect their revenues.

Eisai built a factory in India in 2009. Eisai supplies generic drugs and lower priced drugs from this plant, and it has also strengthened its sales network.

Regarding the company's financial performance, as shown in Table 4, sales in developed markets started to decrease from 2011, and this was related to the impact of its leading products losing their patent protection. At the same time, the sales in emerging countries have increased, little by little. Consequently, in spite of overall decreasing sales, Eisai secured its profit through reduced operating expenses (Figure 3).

The activities of Astellas[10] are different from the other three companies. In addition to implementing ways to reduce costs, Astellas has executed certain regional strategies, including introducing drugs which meet the needs of consumers in emerging countries and strengthening their sales network to sell patented drugs. The strategy is vital for Astellas to be trusted and chosen by its customers, through enhancing customer satisfaction based on strengthening the sales network. Astellas has implemented this method of strengthening its sales network, not only in developed markets but also in emerging markets.

Table 5 shows that Astellas is recovering from a fall in sales, which was due to the impact of leading products having lost their patent protection in developed markets the earliest among the four companies. The reason for this trend may be due to the efficacy of strengthening the sales network. In the case of pharmaceuticals, sales targets are pharmacies and hospitals (doctors). If pharmacies and hospitals make out prescriptions for the PCs' products then the PCs' sales and profits will increase even though the products might have lost their patent protection. Consequently, Astellas is maintaining its net income as well as net sales as it suppresses its trading expenses effectively (as shown in Figure 4).

The data from the four companies reveals three facts:

The companies have achieved the objective of supplying low-priced drugs by reducing costs in order to secure their profit, especially by reducing sales administrative expenses. Is this method of reducing sales administrative expenses enough for improving profit? This is not likely. It seems that reducing R&D costs, which account for a large proportion of trading expenses, may also be needed. Of course, R&D is seen as the driving force that leads to sustainable growth for firms. However, by concentrating on developing

[10] Astellas was formed on 1 April 2005 from the merger of Yamanouchi Pharmaceutical Co., Ltd. and Fujisawa Pharmaceutical Co., Ltd. Therefore, the data of 2000-2005 in Table 5 and Figure 4 are simple additions of figures for Yamanouchi and Fujisawa.

core technology and outsourcing other research, more costs can be reduced while maintaining sustainability. In fact, Pfizer works in this way to reduce R&D costs. As a result, Pfizer has reduced their R&D costs from $9,074 million in 2011 to $7,870 million in 2012.[11]

Secondly, Takeda and Daiichi Sankyo lost revenues despite increasing sales. The financial results of Takada and Daiichi Sankyo showed that the cost of lower priced drugs is not offset by the resultant increase in sales volumes (Grover, A. et al, 2012). This fact argues against differential pricing based on price elasticity of demand. The cost of lower pricing means the cost of introducing low pricing. In this paper, it refers to the cost of acquiring a generic manufacturer, including increasing personnel expenses and paying settlements to the FDA. Nevertheless, it is difficult to say that Takeda and Daiichi Sankyo failed in the short-term, as the approach of considering consumer needs (low-priced drugs) will determine the PCs' long-term success. Therefore a long-term perspective is necessary in order to judge the activities of the four companies.

Thirdly, the case of Daiichi Sankyo, (the battle between Ranbaxy and the FDA), reveals that working with a cross-division management system is flawed. The fact is that this is not only the case for Daiichi Sankyo, but also for Takeda[12] and most Japanese companies. The issue for these companies, which lack some technologies and knowledge after acquiring foreign companies, is that they try to keep the introduction of foreign managers with a considerable, broad business experience to a minimum, and this has become a vital question. Regarding this question, it might be necessary for Japanese companies to learn from the way that Takeda is reforming its corporate governance system.[13] However, as corporate governance systems are not within the scope of this paper, and furthermore it is a big issue needing more research, I would prefer to have another opportunity to discuss it.

6. Conclusion and further study

In reviewing representative literature that focuses on the differential pricing of

[11] Pfizer Inc., 2012, Annual report.

[12] Mr. Hasegawa, president and CEO of Takeda, said that 'we failed in the management of foreign subsidiary companies (Nycomed and Mutilab) because of the lack of a manager who had broad business experience', in an interview with Nihon Keizai Shimbun, on December 1st, 2013.

[13] Source: Website of Takeda Pharmaceutical Company Limited
http://www.takeda.co.jp/news/2013/20131130_6077.html (Accessed on December 1st, 2013)

pharmaceuticals, we have considered the approach of setting low prices for low-income consumers while securing the profit of a PC, as a way of balancing the IP conflict due to access to medicines. This has received widespread support from industry, society, and academics. Nevertheless, the practice of 'differential pricing' as part of corporate behavior has been relatively less detailed.

This paper has explored the issue from a corporate perspective, by examining four R&D-driven PCs in Japan. The paper has examined the activities of four companies based on their annual reports, and discusses the results of this case study. The data from the four companies reveals that they balance the intellectual property issue by supplying low-priced drugs; however, they do not mention the real pricing standards they used. Regarding pricing standards, I plan to carry out some interviews to analyze this as part of future research.

The limitation of this research is that the four companies run their businesses in different regions, although in the same segment of emerging countries.

Table 1: Patent Expiration and Decreasing Sales (in billions of Yen)

Company	Product (efficacy)	Expiration point (in America)	Mar.2000	Mar.2001	Mar.2002	Mar.2003	Mar.2004	Mar.2005	Mar.2006	Mar.2007	Mar.2008	Mar.2009	Mar.2010	Mar.2011	Mar.2012	Mar.2013
Takeda	TAKEPRON (antiulcer drug)	Nov. 2009	82.8	94.3	114.2	133.2	156	160	159.9	150.7	148.7	271.4	218.1	133.6	122.1	110.2
	ACTOS (type 2 diabetes drug)	Nov.2011	9	69.5	120.4	155.3	177.6	193	243.8	336.3	396.2	387	384.7	387.9	296.2	122.9
	BLOPRESS (Antihypertensive drug)	June. 2012	23.5	48.3	77.4	105.5	144.3	152.4	190.9	206.2	223.1	230.3	222	218	216.3	169.6
Astellas	PROGRAF (immunosuppressant drug)	Apr.2008	41.8	50.6	72.4	89.7	104.4	122.8	145.9	175.4	203	201	186.7	162.6	154.8	161.7
	HARNAL (Drug for treating dysuria)	Oct.2009	67.3	73.8	96.9	110.4	122.3	135.9	137.8	127	122.4	116.6	113.9	66.5	60.8	54
Daiichi Sankyo	CRAVIT (Synthetic antibacterial drug)	Dec.2010	-	-	-	-	47.4	47.1	50.2	46.7	47.4	43	87.2	69.1	52.4	35.9
Eisai	ARICEPT (Alzheimer dementia drug)	Nov.2010	57.6	71.1	95.8	115.3	141.6	162.9	186.5	252.9	291	303.8	322.8	290.3	147.1	94.3
	PARIET (proton pump inhibitor)	May.2013	18.4	54.7	98.8	117.4	129	132.3	154.5	174.3	175.9	159.9	148	136.9	126.4	108.4

Note: The figures express the sales of target products whose patent has expired.

Source: Annual Report of the companies mentioned above.

Table 2: Key Financial indicators of Takeda

(in billions of Yen, for the year ended March 31)

Items	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Sales in developed markets	892.4	929.3	985.4	1028.3	1067.8	1103.6	1191.2	1280.2	1347.6	1511.4	1437.6	1377.7	1394.6	1341.7
Sales in emerging markets	30.7	34.2	19.7	17.8	18.6	19.4	21	25	27.2	27	28.4	41.7	114.3	215.6
Net sales	923.1	963.5	1005.1	1046.1	1086.4	1123	1212.2	1305.2	1374.8	1538.4	1466	1419.4	1508.9	1557.3
Operating expenses	751.7	737.4	723.9	735.4	714.8	737.7	809.4	846.7	951.7	1231.9	1045.8	1052.3	1238.6	1434.8
Trading surplus	171.4	226.1	281.2	310.7	371.6	385.3	402.8	458.5	423.1	306.5	420.2	367.1	270.3	122.5
Net income	119.6	148.6	235.7	271.8	285.2	277.4	313.2	335.8	355.5	234.4	297.7	247.9	124.2	131.2
R&D expenses	77.3	89.8	100.3	124.2	129.7	141.4	169.6	193.3	275.8	453	296.4	288.9	281.9	324.3
Basic earning per common share(yen)	135.55	166.39	267.02	307.63	321.86	311.01	353	386	418.97	289.82	377.19	314.01	157.29	233.78
Dividends paid per common share	32	50	60	65	77	88	106.00	128	168	180	180	180	180	180
ROE(%)	12.5	13.2	17.9	18.2	17.0	14.7	14.4	14.1	15.1	10.9	14.4	11.8	6.1	6.3
Share price(yen)	7,300	6,050	5,220	4,430	4,640	5,110	6,710	7,730	4,990	3,400	4,115	3,880	3,642	5,030

Note: The segment of developed countries includes Japan, North America, France, Italy, England and Ireland. The segment of developing countries includes China, Russia/CIS, Brazil, Turkey, Latin America and Indonesia.

Source: Takeda, 2000-2013, Annual Report.

Table 3: Key Financial indicators of Daiichi Sankyo

(in billions of Yen, for the year ended March 31)

Items	2000	2001	2002	2003	2004	2005	2,006	2007	2008	2009	2010	2011	2012	2013
Sales in developed markets	873.6	845.4	862	870.9	898.1	892.4	899.7	899	839.9	798	841.2	768	734.4	771.5
Sales in emerging markets	16.6	16.8	19.7	21	21	23.9	26.2	30.5	40.2	44.2	110.9	199.4	204.3	226.3
Net sales	890.2	862.2	881.7	891.9	919.1	916.4	925.9	929.5	880.1	842.1	952.1	967.4	938.7	997.8
Operating expenses	686.5	710.6	748.5	746.7	770.9	775.4	771.2	793.2	723.3	753.2	856.6	845.3	840.5	897.3
Trading surplus	203.7	151.6	133.2	145.2	148.2	141	154.7	136.3	156.8	88.9	95.5	122.1	98.2	100.5
Net income	66.9	71	70.2	47.4	70.1	85.5	87.7	78.6	97.7	△215.5	41.9	70.1	10.4	66.6
R&D expenses	98.6	118.7	127.7	140.1	145.7	144	158.7	170.7	163.5	184.5	196.8	194.3	185.1	183.0
Basic earning per common share(yen)	-	-	-	-	-	-	119.49	107.75	135.35	△304.22	59.45	99.62	14.75	94.64
Dividends paid per common share(yen)	-	-	-	-	-	-	25	60	70	80	60	60	60	60
ROE(%)	-	-	-	-	-	-	7.3	6.3	7.8	△20.5	4.9	8.2	1.3	7.9
Share price(yen)	-	-	-	-	-	-	2,685	3,610	2,945	1,648	1,751	1,606	1,508	1,815

Note: 1) The segment of developed countries includes Japan, North America and Europe. The segment of developing countries includes China, Brazil, Thailand, India, Africa and Latin America.

2) The figures for 2000~2005 are simple additions of the figures for Daiichi and Sankyo.

Source: Daiichi Sankyo, 2006-20013, Annual Report.

Table 4: Key Financial indicators of Eisai

(in billions of Yen, for the year ended March 31)

Items	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Sales in developed markets	299.5	356.9	424.7	457.5	490.3	521.1	583.7	650.4	706.5	753.4	771.6	733.6	610.6	530.1
Sales in emerging markets	3.0	4.8	7.0	9.1	9.9	11.9	17.6	23.7	27.8	28.3	31.6	35.3	37.4	43.6
Net sales	302.5	361.7	431.7	466.6	500.2	533	601.3	674.1	734.3	781.7	803.2	768.9	648	573.7
Operating expenses	265.4	302.7	359	390.7	417.1	446.2	505.6	568.8	716.6	689.9	716.8	655.8	552.3	468.4
Trading surplus	37.1	59	72.7	75.9	83.1	86.8	95.7	105.3	17.7	91.8	86.4	113.1	95.7	105.3
Net income	11.3	23.3	36.5	41	50.1	55.5	63.4	70.6	△17.0	47.7	40.3	67.4	58.5	48.3
R&D expenses	46.7	49.6	55	59.7	69	78.3	93.2	108.3	225.4	156.1	179.1	145	125.1	120.4
Basic earning per common share(yen)	38.64	78.68	123.5	141.2	172.1	193.4	221.9	247	△59.8	167.3	141.6	236.5	205.3	169.4
Dividends paid per common share(yen)	21.5	23	29	32	36	56	90	120	130	140	150	150	150	150
ROE(%)	3.5	6.9	10.3	10.9	12.4	12.6	13	13	△3.4	10.9	9.6	16.4	14.3	10.9
Share price(yen)	2,705	3,120	3,150	2,185	2,820	3,640	5,130	5,650	3,400	2,880	3,335	2,984	3,290	4,200

Note: The segment of developed countries includes Japan, America and Europe.

The segment of developing countries includes China, India and the Middle-East.

Source: Eisai, 2000-2013, Annual Report.

Table 5: Key Financial indicators of Astellas

(in billions of Yen, for the year ended March 31)

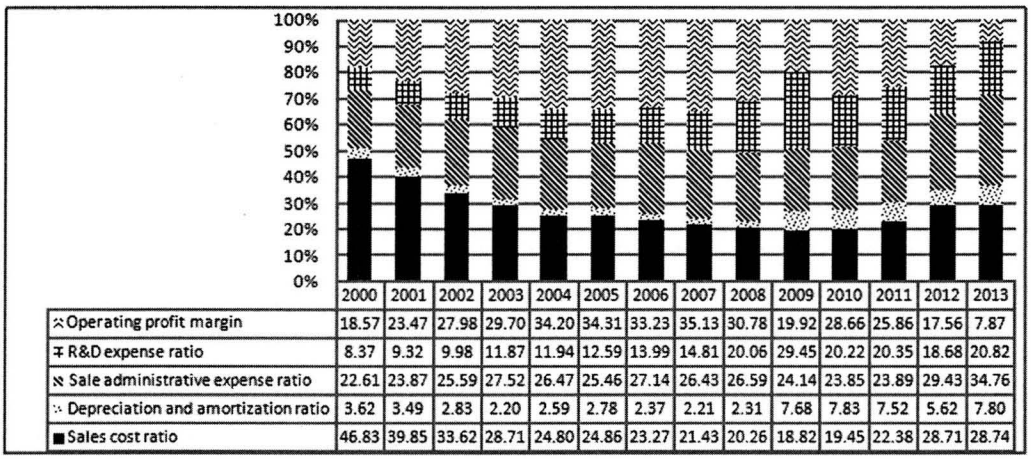
Items	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Sales in developed markets	717.3	749.1	814.9	877.9	896.9	845.9	859.6	894.7	944.6	845.9	883.2	902	933.7	962.7
Sales in emerging markets	5.5	6.3	7.7	10.7	9.7	16.1	19.6	25.7	27.8	27.2	30	33.7	35.7	42.9
Net sales	722.8	755.4	822.7	888.7	906.6	862	879.4	920.6	972.6	965.7	974.9	953.9	969.4	1005.6
Operating expenses	591.9	623.9	681.6	720.9	748.9	669.8	686.3	730.1	696.6	715.3	788.4	834.8	837.8	851.7
R&D expenses	100.4	106.6	122.3	129.3	143.7	127.6	142.1	167.9	134.5	159.1	195.6	217.3	189.8	182.0
Trading surplus	130.9	131.5	141.1	167.8	157.7	192.2	193	190.5	275.9	250.4	186.4	119.2	131.5	153.9
Net income	80.1	60.8	81.3	88.5	101.5	59.5	103.7	131.3	177.4	171	122.3	67.7	78.2	82.9
Basic earning per common share(yen)	-	-	-	-	-	-	8.8	11.3	16.1	16	11.7	6.5	7.7	8
Dividends paid per common share(yen)	-	-	-	-	-	-	184	344.07	349.89	356.11	261.84	146.49	169.38	180.4
ROE(%)	-	-	-	-	-	-	70	80	110	120	125	125	125	138
Share price(yen)	-	-	-	-	-	-	4,470	5,080	3,860	3,020	3,385	3,080	3,400	5,060

Note: 1) The segment of developed countries includes Japan, America, Canada, Latin America and Europe. The segment of developing countries includes China, Thailand, Vietnam and Malaysia.

2) The figures for 2000-2005 are simple additions of the figures for Yamanouchi and Fujisawa.

Source: Astellas, 2006-2013, Annual Report.

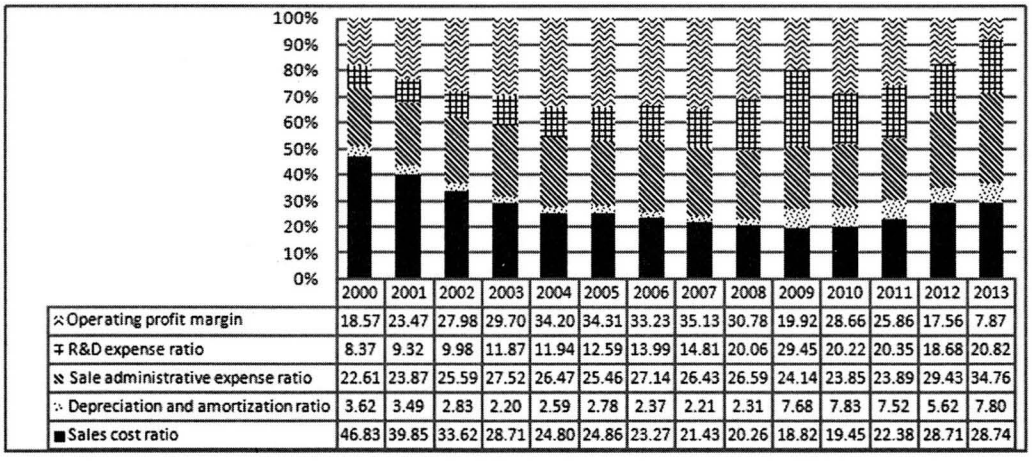
Figure 1 The cost structure of Takeda



	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Operating profit margin	18.57	23.47	27.98	29.70	34.20	34.31	33.23	35.13	30.78	19.92	28.66	25.86	17.56	7.87
R&D expense ratio	8.37	9.32	9.98	11.87	11.94	12.59	13.99	14.81	20.06	29.45	20.22	20.35	18.68	20.82
Sale administrative expense ratio	22.61	23.87	25.59	27.52	26.47	25.46	27.14	26.43	26.59	24.14	23.85	23.89	29.43	34.76
Depreciation and amortization ratio	3.62	3.49	2.83	2.20	2.59	2.78	2.37	2.21	2.31	7.68	7.83	7.52	5.62	7.80
Sales cost ratio	46.83	39.85	33.62	28.71	24.80	24.86	23.27	21.43	20.26	18.82	19.45	22.38	28.71	28.74

Source: Takeda, 2000-2013, Annual Report.

Figure 2 The cost structure of Daiichi Sankyo

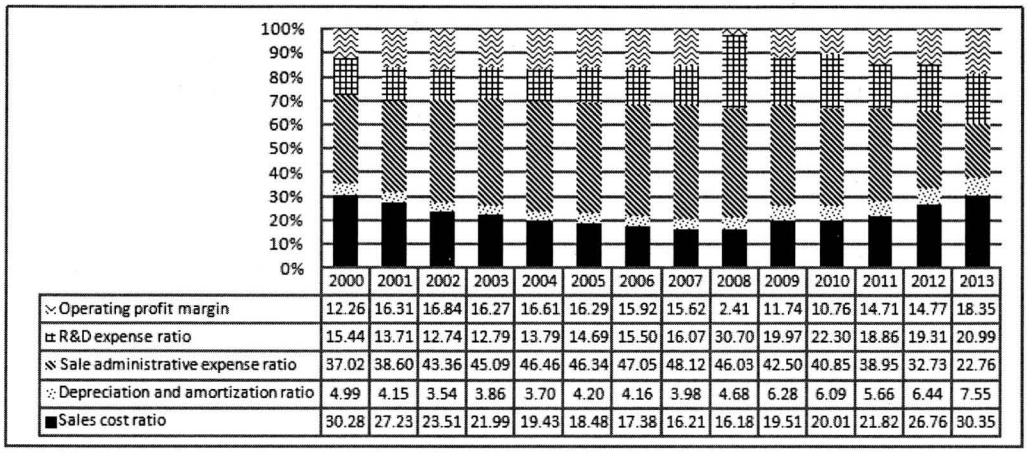


	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Operating profit margin	18.57	23.47	27.98	29.70	34.20	34.31	33.23	35.13	30.78	19.92	28.66	25.86	17.56	7.87
R&D expense ratio	8.37	9.32	9.98	11.87	11.94	12.59	13.99	14.81	20.06	29.45	20.22	20.35	18.68	20.82
Sale administrative expense ratio	22.61	23.87	25.59	27.52	26.47	25.46	27.14	26.43	26.59	24.14	23.85	23.89	29.43	34.76
Depreciation and amortization ratio	3.62	3.49	2.83	2.20	2.59	2.78	2.37	2.21	2.31	7.68	7.83	7.52	5.62	7.80
Sales cost ratio	46.83	39.85	33.62	28.71	24.80	24.86	23.27	21.43	20.26	18.82	19.45	22.38	28.71	28.74

Note: The figures for 2000~2005 are simple additions of the figures for Daiichi and Sankyo

Source: Daiichi Sankyo, 2006-2013, Annual Report

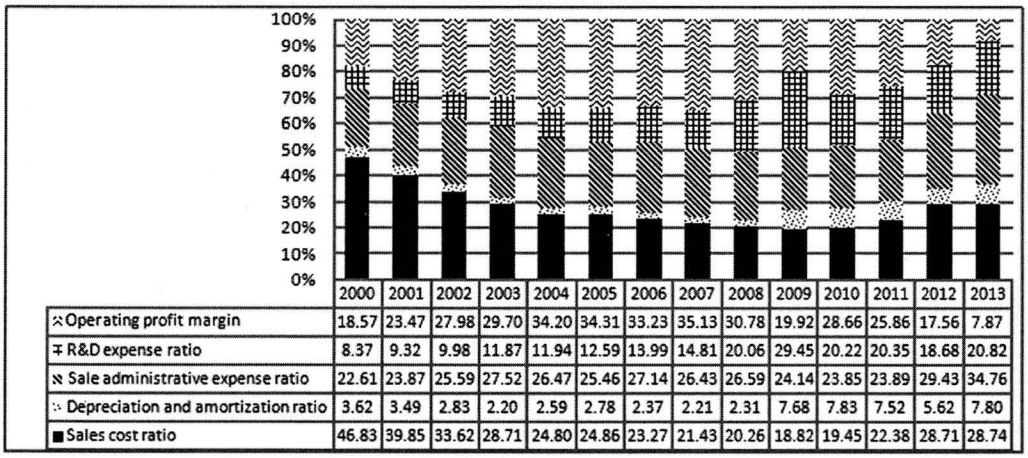
Figure 3 The cost structure of Eisai



	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Operating profit margin	12.26	16.31	16.84	16.27	16.61	16.29	15.92	15.62	2.41	11.74	10.76	14.71	14.77	18.35
R&D expense ratio	15.44	13.71	12.74	12.79	13.79	14.69	15.50	16.07	30.70	19.97	22.30	18.86	19.31	20.99
Sale administrative expense ratio	37.02	38.60	43.36	45.09	46.46	46.34	47.05	48.12	46.03	42.50	40.85	38.95	32.73	22.76
Depreciation and amortization ratio	4.99	4.15	3.54	3.86	3.70	4.20	4.16	3.98	4.68	6.28	6.09	5.66	6.44	7.55
Sales cost ratio	30.28	27.23	23.51	21.99	19.43	18.48	17.38	16.21	16.18	19.51	20.01	21.82	26.76	30.35

Source: Eisai, 2000-2013, Annual Report

Figure.4 The cost structure of Astellas



	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Operating profit margin	18.57	23.47	27.98	29.70	34.20	34.31	33.23	35.13	30.78	19.92	28.66	25.86	17.56	7.87
R&D expense ratio	8.37	9.32	9.98	11.87	11.94	12.59	13.99	14.81	20.06	29.45	20.22	20.35	18.68	20.82
Sale administrative expense ratio	22.61	23.87	25.59	27.52	26.47	25.46	27.14	26.43	26.59	24.14	23.85	23.89	29.43	34.76
Depreciation and amortization ratio	3.62	3.49	2.83	2.20	2.59	2.78	2.37	2.21	2.31	7.68	7.83	7.52	5.62	7.80
Sales cost ratio	46.83	39.85	33.62	28.71	24.80	24.86	23.27	21.43	20.26	18.82	19.45	22.38	28.71	28.74

Note: The figures for 2000-2005 are simple additions of the figures for Yamanouchi and Fujisawa.

Source: Astellas, 2006-2013, Annual Report.

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